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ABSTRACT

These guidelines are provided to assist principals, department chairpersons, and teachers in industrial education to interpret policy and to formulate local school programs in the Los Angeles (California) United School District. Guidelines are organized by topics for which these persons often request information or interpretations. Though the guidelines are not official school district policy, they are what the central office staff believe to be best for developing a strong instructional program for the students enrolled in industrial education courses. Guidelines cover all levels of industrial education--elementary, secondary, regional occupational centers, and regional occupational programs. Topics covered in the seven sections of the booklet include rationale for industrial arts; terminology; programs; scheduling of teachers and students; curriculum and instruction; budgets, facilities, and equipment; and supervision, including organization of the central office staff and teacher selection and leave policy. (KC)

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GUIDELINES FOR
INDUSTRIAL EDUCATION PROGRAMS
IN ELEMENTARY AND SECONDARY SCHOOLS,
REGIONAL OCCUPATIONAL CENTERS,
AND REGIONAL OCCUPATIONAL PROGRAMS

Prepared by Industrial Education Office Staff

LOS ANGELES UNIFIED SCHOOL DISTRICT
Division of Career and Continuing Education
Career Education Services Unit
Industrial Education Office
1981 Revision

CE 029 868

U.S. DEPARTMENT OF EDUCATION
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INTRODUCTION

Principals, department chairpersons and teachers in industrial education often ask the Industrial Education Office staff for interpretations of policy and for direction and guidance in formulating the local school program of industrial education. The Guidelines which follow were written to meet those needs.

Guidelines are organized by topics for which information or interpretation is often requested. Though not District policy, they are what staff believe to be best for developing a strong instructional program for the students enrolled in industrial education courses.

We recognize the need for flexibility at the school level and the right of the local school administrator to make final decisions affecting industrial education in his or her school which may not be consistent with these Guidelines.

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I. RATIONALE

It is essential that a person living in the twentieth century be familiar with the technology of the twentieth century, and industrial education provides this opportunity for students in our school system. Moreover, our Board of Education is committed to the thesis that students graduating from the school system should be prepared for college or for employment in business and industry. Industrial education courses prepare students for both. These courses are designed to give engineering students experiences in drafting, electronics, mechanics, and construction. Industrial education courses also prepare students for entry into a skilled trade.

Industrial education courses are valuable to college students by providing them with an employable skill while attending college to pay for their education if necessary.

The truly educated person of the future will not only need a command of the fundamentals in the three R's and an appreciation of art and music, but also the technical "know-how" to earn a living and live effectively.

II. TERMINOLOGY

Industrial education is a generic term used to describe two major types of programs. One is general and exploratory, and the other is vocational.

The Elementary Industrial Arts program is used as a vehicle to teach students the academics and to familiarize them with modern technology and career awareness.

The junior high school program is essentially general and exploratory. Senior high school beginning courses (single period classes) are also of this type and are scheduled for students who have not had previous courses or experience in the field concerned.

In these beginning courses, some students discover whether or not they have interests in technical fields and learn basic skills in use of hand tools and power equipment. For other students these classes are prevocational.

The other major part of the industrial education program is comprised of vocational courses. These are double-period courses offered in senior high schools, regional occupational centers, and off-campus regional occupational programs. In these advanced classes, students learn vocational skills that will prepare them for full-time employment, or qualify them for advanced vocational training or for part-time work if they plan to attend a college. The industrial education program can, therefore, be regarded as offering training in each of the fields represented through which students can develop salable skills.

Career education, of which industrial education is a vital part, includes three major components--development of an awareness of opportunities for careers, exploration of potential careers, and preparation for careers. While the exploratory and general courses in junior and senior high schools help students to develop an awareness of opportunities, the vocational courses for students enrolled in grades 11 and 12, and the regional occupational programs and regional occupational centers courses provide the training necessary for students to qualify for employment and to prepare for careers in the fields concerned.

III. PROGRAMS

ELEMENTARY INDUSTRIAL ARTS

With our advanced technology, it is imperative that elementary students be fundamentally educated for the 21st Century.

The new thrust to relevant learning in Elementary Industrial Arts is the CONSTRUCTIVE LEARNING METHOD, an interdisciplinary teaching strategy that excites elementary students into learning the academics.

Elementary Industrial Arts is one vehicle used to teach the academics to K-6 students. Through this CONSTRUCTIVE LEARNING METHOD, students are motivated into the learning process that enhances the basics which must be learned at this level. It also introduces the teaching of career awareness as well as learning safe use of basic hand tools, and getting along with one another.

The Elementary Industrial Arts program K-6 provides students with "heads-on" and "hands-on" experience which help to achieve curriculum objectives in basic academics.

The objectives of the program are to:

a. Make learning relevant and develop student self-confidence.

b. Develop the safe use of basic hand tools and materials.

c. Promote cooperation with peers and improve classroom behavior.

d. Familiarize students with programs available in junior and senior high schools which relate to trades and industry.

e. Familiarize students with modern technology and career awareness.

All elementary teachers should have tool carts with tools necessary to implement the Industrial Arts CONSTRUCTIVE LEARNING METHOD in their class. Teachers normally receive sufficient supplies to continue this "hands-on," "heads-on" learning experience in their class.

THE JUNIOR HIGH SCHOOL INDUSTRIAL EDUCATION PROGRAM

The beginning courses in industrial education offered in junior high school should provide students with opportunities to explore a variety of industrial subjects in order to:

a. Develop an insight and understanding of industry and its place in our culture.

b. Develop and/or discover their talents, attitudes, interests, and individual potential as they are related to the industrial-technical areas.

c. Develop an awareness of the varied career opportunities in our industrial-technical society.

d. Develop abilities in the proper and safe use of tools, machines, processes, and techniques utilized by industry.

e. Interrelate and coordinate the content of industrial arts education with that of other subject matter disciplines.

f. Make an informed and meaningful occupational/education selection; and

g. Prepare for entrance into advanced or highly skilled vocational education programs.

These objectives can best be achieved through students taking a series of 10-week exploratory courses in such subjects as drafting, electronics, graphic arts, metal, wood, small engines, and plastics.

THE SENIOR HIGH SCHOOL INDUSTRIAL EDUCATION PROGRAM

The senior high school course offerings should provide students with opportunities to explore industrial subjects not taken in junior high school; and, for those students who have made a tentative career choice, to prepare them for entry into trade and technical occupations.

Students should achieve the following objectives:

a. Develop in-depth skills and learn the related technical information necessary for entry-level employment in an industrial occupation.

b. Become acquainted with the procedures necessary to secure employment.

c. Develop the attitudes and work habits necessary to hold a job and to qualify for advancement.

d. Develop the salable skills that are necessary to hold a part-time job while attending high school or college.

Standard industrial education subjects offered in senior high schools are:

a. Auto Mechanics

b. Drafting

c. Electronics

d. Graphic Arts

e. Metals

f. Woods

Some schools offer specialized courses such as: Carpentry, Cabinetmaking, Auto Body Repair, Television Servicing, Machine Shop, etc. Schools should use the course titles used in the Secondary Curriculum Guide.

At least once per year, trade advisory committees consisting of representative craftsmen from the trade, should review the curriculum, equipment, supplies, and placement information utilized in the on-going program.

Teachers of high school vocational industrial education courses should have had work experience in the subject they are teaching so that the instruction will reflect current industrial techniques and methods.

REGIONAL OCCUPATIONAL PROGRAMS

Referred to as "ROP", these specialized programs should provide courses, unique opportunities, and options not available to students enrolled in the regular high school vocational program. Specialty courses should be scheduled that normally do not attract a sufficient number of students at a single high school to warrant offerings of a class in that field. Ideally, regional occupational courses are offered at industrial plants where students have an opportunity to learn skills while utilizing equipment not available in a regular high school because of its cost or specialized nature.

Another kind of regional occupational program is the type offered at a selected high school. A majority of the students in the class are from the school at which the course is offered, but students from neighboring high schools are also permitted to enroll. When a regional occupational program is established in a selected high school, it should offer in-depth instruction in a specialized aspect of the trade and lead to immediate employment upon graduation from high school.

REGIONAL OCCUPATIONAL CENTERS

Referred to as "ROC", the five regional occupational centers offer industrial education courses of a year or less in length that prepare youth and adults for entry-level positions in trade and industry. Such courses should only be offered when requested by trade advisory committees and when there are jobs available for students completing the program. The courses should be terminal and not part of a series of courses requiring additional training beyond that offered by the ROC center in order for the student to qualify for employment.

The first priority of courses to be offered at the centers should be in trade and technical fields in which jobs are available and for which training programs are not available in the existing high schools. The laboratory instruction at the centers should be practical in nature and should meet industrial standards for craftsmanship.

ROC centers should provide both pre-employment courses during the day for young adults and adults seeking jobs and evening courses for adults who wish to upgrade their training to keep abreast with technological changes in their trade. Selected high school students whose needs are not met through regular high school programs should be offered opportunities to attend classes at occupational centers on a full-time basis to prepare themselves for employment.

EVENING SCHOOL CLASSES FOR ADULTS

Classes offered in community adult schools provide students opportunities to learn skills that will qualify them for employment or strengthen their skills if they already hold jobs. Adult schools should offer industrial

education courses that also include skill training which can be used by adults in worthwhile leisure time activities. Regular high school shop facilities should be utilized; and, when qualified, the regular day high school teachers are assigned to conduct instruction in the evening classes. If the number of work stations is limited in the shop, priorities for enrollment of students should be in the following order: persons who wish to learn a skill to qualify for employment; second, persons who are employed but who wish to take the course to strengthen their qualifications; and third, persons who wish to learn a skill to pursue avocations.

All physical facilities, equipment, and tools that are available to the day high school teacher, should also be available to the evening school teacher. Separate budgets for supplies should be provided. Community adult schools conducting evening classes should, at the request of apprenticeship committees, provide necessary facilities and staff for related apprenticeship classes.

ARTICULATION OF INSTRUCTIONAL PROGRAMS

The articulation of courses from junior high, senior high schools, and ROP and ROC programs, should be such that there is a logical progression from simple to complex without undue repetition. Whenever possible, the District should offer a complementary junior high school course for each regular senior high school industrial education course. The junior high course should be exploratory. The senior high course should provide for greater depth of study and for more advanced training than that offered in junior high school. Courses should be articulated between the two levels so that junior high graduates who enter senior high will not be required to repeat, unduly, content that has already been covered.

Senior high school teachers should be familiar with what is being taught in junior high school and should build courses upon the foundation that has been provided in junior high school.

Junior high students who have already mastered the beginning subject matter offered in senior high schools should be enrolled in advanced classes. If schedules do not permit use of this procedure, beginning classes should provide specially enriched and challenging work to these students. High school teachers should make their students aware of appropriate ROP and ROC courses available to them.

Junior and senior high school teachers of the same subject should agree upon a continuum of subject matter that progresses from simple to complex and that still provides for student motivation, enrichment, and repetition, as appropriate.

EXPERIMENTAL COURSES

New courses and revisions of existing courses in industrial education should be encouraged to assure that instruction is current in relation to technological changes in industry. Proposed experimental courses should be presented to the District trade advisory committees for their recommendation. It is important that competent teachers be assigned to new courses, that such courses are properly planned, and that adequate supplies and equipment are available.

Development funds to encourage the introduction of new approaches and new courses in emerging occupational fields are available from VEA funds. The course outline should specify the skills and knowledge to be developed, and the length of the course should be adequate to accomplish this goal. An adequate budget is necessary for the purchase of necessary textbooks, tools, and equipment and supplies.

Prior to the assignment of a teacher, his or her background should be reviewed to determine whether the teacher has the skills and inservice training and work experience necessary to conduct the class successfully.

New courses should not be scheduled until all of these conditions have been satisfied.

IV. SCHEDULING OF TEACHERS AND STUDENTS

TEACHER ASSIGNMENTS

The course assignments of industrial education teachers should be consistent with their technical competency and credential authorizations. Teachers of the two-hour 2AB, 3AB vocational courses must hold a vocational credential authorizing the teaching of that subject. Principles should be knowledgeable concerning credential limitations and the subject competency of each candidate. A school file should be maintained for each teacher, and it should include transcripts of course work completed and records of trade experience. These files should be available for the evaluation of teacher competencies in given areas. A new teacher should be assigned an appropriate program and should not be asked to perform duties that may interfere with class preparations; particularly during the first two years. Assignments involving stagecraft, audio-visual, or other faculty responsibilities, should therefore be withheld until the teacher has had adequate experience. The best instructional program results when each teacher teaches five classes in his/her subject specialty in the same shop.

PROGRAMMING OF STUDENTS

Enrollment in industrial education classes should be based upon the needs of students and district graduation requirements.

In junior high school, the shop activities in the beginning exploratory courses should cover as broad a range as possible. When scheduling students into advanced classes in the elective program, priority should be given to students who have made a tentative career choice, and who plan to continue with industrial education courses in senior high school. Students who have yet to make a career choice should continue enrolling in a variety of subjects until they discover their interest and/or aptitudes.

Since our district is committed to the philosophy that all students who graduate from senior high school should either be prepared to enter the world of work, or enter college, and should possess a salable skill, and since industrial education classes place an emphasis on the salable skill, counseling staffs should make a greater effort to program students into the industrial education program. Senior high students should enroll in courses that will prepare them for employment in fields that are consistent with their interests and abilities. They should also be made aware of career opportunities in each field so that they may make long-range plans for advancement.

National statistics indicate that only about 5 percent of our nation's work force are employed at jobs requiring a four-year college degree. It follows that the percentage of students enrolled in vocational courses should be much greater than it has been in the past.

SINGLE SUBJECT FIELD MAJOR

In industrial education a student may select either a 30 credit or 50 credit major. Generally, a student who has an interest in and an aptitude for an industrial education subject but also has an interest in attending college, should select the 30 credit industrial education major. The student who has made a career choice of an industrial education subject and who intends to work full-time in a skilled trade upon graduation should enroll in a 50 credit vocational industrial education major. This will permit the student to receive the maximum amount of training in a subject and make him/her more easily employable upon graduation.

CLASS SIZE

There are suggested District guidelines regarding class size in industrial education classes. There is a need for guidelines because of the possibility that serious accidents may occur because of overcrowding.

Enrollment of students in industrial education classes should be limited to the number that can work safely and learn at a reasonable rate. Factors to be considered in determining the maximum number of students include:

a. The number of actual work stations available.

b. The nature of the activity in the shop (whether students remain at seats, move about, handle hazardous materials, or use hazardous equipment, etc.).

c. The nature of the student (his or her emotional, physical and mental make-up and abilities).

d. The number of emotionally disturbed students.

In view of these factors, it is essential that class size be carefully considered. The California Education Code, Chapter 5, Division 9, which now includes Article 6, Section 12095, defines a basic work station in industrial education as:

> "an assigned location where a student normally spends the majority of his class time performing the operational functions necessary to meet the performance objectives and goals of the course, including industrial safety education. For these purposes, the number of students in any industrial facility or laboratory in elementary or secondary programs shall not exceed the number of basic work stations designed for the number of students assigned, as determined by the local governing board of the school district."

These guidelines are subject to interpretation by teachers and administrators who will need to make judgments regarding the enrollment capacities of individual shops.

If there are problems in a secondary school determining the number of work stations in a particular shop, the industrial education office will provide a subject area resource teacher to assist the administrator in making this determination.

The 20 percent bonus for enrollment in high school vocational classes should reduce the number of students enrolled in these classes.

GIRLS IN INDUSTRIAL EDUCATION

All classes are available to boys and girls who have an interest in industrial education. At the junior high level, the general objectives of exploration, discovery of talent, and learning basic skills in the use of tools, are appropriate for both boys and girls. Enrollment in senior high school vocational courses should be open to any student to the extent that he or she has expressed an interest and has demonstrated the necessary talent or ability to be successful in that occupation. At this time, substantial numbers of women are employed in the drafting, graphic arts, and electronic fields.

PHYSICALLY HANDICAPPED STUDENTS

Students with physical handicaps should be permitted to enroll in regular courses in which they have an interest and aptitude, and in which they are able to use the equipment without undue hazard to themselves or to other students. Again, recommendations of trade advisory committees and possibilities of employment should be considered. Counselors and teachers should be aware that industry ultimately sets the physical requirements or standards for workers in a particular trade or craft. Physically handicapped students should not be counseled into a trade in which they will not be employable upon graduation. Because of the added responsibility of the teacher, class sizes should be smaller when physically handicapped students are enrolled. Special schools for handicapped students should be available to meet the needs of severely handicapped students.

MENTALLY HANDICAPPED STUDENTS

EMR and low-index students should not be denied opportunities to enroll in appropriate industrial education courses. Some trades have jobs or skills which can be performed by mentally handicapped students. Students in these categories may perform well in shops or trades in which there is considerable manipulative work, but not in the fields that require abstract reasoning, such as an electronics technician. The need of these students for additional individual help and guidance should also be recognized. Since EMR students represent a load factor of two when enrolled in academic classes (limited to 18), the same load factor should be observed when they are scheduled for shop courses. No student should be enrolled in a class if he or she will create a safety hazard either to the individual or other students.

ESL STUDENTS

Students who have not learned English should only be scheduled into industrial education courses when they have acquired sufficient communication skills to understand instructions on the safe and proper use of hazardous shop equipment. A few ESL students may be absorbed into regular classes if there are bilingual students in the class who can act as interpreters through a "buddy system." As the number of ESL students in a regular class increases, the total number of students should be reduced. A class of normal size is allowable when the teacher is bilingual in the language of the students.

INCREASING ENROLLMENT

When the enrollment of a school grows to the point at which additional teacher time may be assigned to the industrial education department, the increase may be accommodated by offering additional classes in the same shops and subjects. The program may be expanded through payment of auxiliary teacher time to conduct an additional class. This method is flexible and makes it possible to increase enrollment in the subject for which there is a demand. Additional facilities are not required, and the class may be terminated after a semester or a year if the demand is not sustained.

In some instances, the addition of a teacher who has the appropriate background and training to instruct in several different subjects should be considered. This solution is seldom satisfactory because the majority of industrial education teachers specialize in one field and are reluctant to teach other subjects. Problems also arise when two teachers share the same budget, equipment, tools and supplies. This may lead to serious staff problems, as well as a deterioration of the shop and the program. It is difficult to recruit a talented new teacher who can instruct in several subjects and who can also work smoothly with senior members in the department.

When increases in enrollment appear to be relatively permanent, new courses should be offered. In this situation, consideration should be given to scheduling classes in subjects not being offered in order to increase the student options and opportunities for employment. In junior high schools, it is preferable to offer courses that provide for exploration of new and emerging occupations. In the senior high school, the availability of teachers who are competent in the new field and the appropriateness of the course should be determined. In this regard, it is essential that recommendations of trade advisory committees in new fields receive consideration.

DECREASING ENROLLMENT

If school enrollment drops to the point at which a reduction in the staff of the industrial education department is necessary, it may be advantageous to close one shop entirely. An alternative is to displace the teacher and then reschedule the other teacher assignments in order to keep all shops open. Although the latter plan does not involve a reduction in curriculum offerings, it should only be implemented when the staff includes teachers

who have the competency and necessary credentials to instruct in the subject that otherwise would no longer be offered. Industrial education teachers generally are best qualified to teach one subject; any other shop course to which they are assigned may, therefore, represent a secondary interest. A situation of this type may lead to a deterioration of the instructional program and of the facilities involved. Modifying facilities to permit the offering of two or three classes in different subjects in one shop is expensive, and reduces the depth and quality of the program in all subjects unless they are closely related. Any reduction of course offerings should be made only after consideration of trends and opportunities for employment in all of the courses that are offered. If the class being closed is in a junior high school, consideration should be given to the impact this action will have on the high school program in which the students will be enrolling.

V. CURRICULUM AND INSTRUCTION

CURRICULUM MATERIALS

Various types of curriculum resources should be provided by the district to assist the teacher in implementing the course of study. These should include textbooks suitable for various reading levels and for the level of the course, and audio-visual materials for use with overhead, slide and motion picture projectors. Flip charts covering instructional units are available through the Industrial Education Office.

Prepared in cooperation with trade advisory committees, district instructional guides should help give direction to the program in terms of objectives, major topics and units, and provide some guidance as to areas of emphasis and approximate time allotments. Such guides should not restrict the teacher, who will need to experiment in meeting the particular needs of a particular class.

Since it is not possible for the district to supply all the materials required for a given course, teachers should be resourceful and creative in developing classroom materials. Teachers should request assistance from the appropriate resource teacher when developing curriculum materials. Innovation and the development of new approaches to implementing the curriculum should be encouraged.

METHODS OF TEACHING

The nature of industrial education necessitates that there be demonstrations by the teacher followed by student activities in the shop. A demonstration by a skillful teacher is one of the most effective methods of teaching the content of the majority of industrial education courses. Use of "lectures" should be limited to those necessary to cover the technical information related to the manipulative skills taught in the course. The teacher should guide students into specific shop activities that will motivate them to learn the related technical information. Since industrial education involves the use of manipulative techniques, students develop

skills through actual performance. This is best accomplished through producing, constructing, or repairing an article or product. Craftsmanship and work standards should be directed toward meeting industrial standards. Industrial education is also particularly adapted to teaching through use of audio-visual devices, such as models, mock-up, flip charts, slides. films, and overhead transparencies. Teachers should be encouraged to develop visual aids designed to meet the individual needs of their students.

RELATED INFORMATION

As previously stated, the industrial education teacher should utilize shop talks, flip charts, slides, overhead transparencies, motion pictures, and other resources in conducting instruction. Shop work is the "how to" part of the program, and related information emphasizes the "why." Approximately 20 percent of class time should be devoted to instruction in the latter. Some subjects such as electronics may require use of a greater percentage of time in teaching related information, particularly when students have the ability to learn abstract concepts. However, teachers should not spend undue time or give priority to information that is "nice to know," but which is not necessary to perform the operation or to be successful in the trade. Interest and motivation of students are often lost when an excessive amount of time is spent on topics that have little meaning to them. Teaching aids of various types should be used to relate theory to practical applications in specific shop jobs. Each teacher must determine the extent of theory that should be taught to a given class consistent with the abilities of class members and the material to be covered. When the students represent a wide range of abilities, the teacher should provide a greater amount of instruction and additional assignments for the more capable students.

TEACHING BASICS

By Board of Education policy, all teachers in the District are responsible for teaching basic skills of reading, writing, comprehension, and computational skills.

Because of the nature of the subject area, industrial education teachers can do an excellent job teaching the practical application of those basic skills. Students are motivated because they want to repair the automobile, operate a machine, repair a television, etc.; and in order to accomplish these things, they must read the repair manuals or texts concerning the particular application. It is impossible to satisfactorily complete courses such as machine shop, drafting, and electronics without being proficient in computational skills.

SHOP ACTIVITIES

Since the activities of students in industrial educatic courses should generally center around the construction of projects or repair of products, approximately 80 percent of a student's class time should be devoted to shop or laboratory activities. The project method, in which students are actively engaged in a "doing" process, is recommended. Developing skills in the use of hand tools and in the operation of machinery and specialized equipment should, therefore, be accomplished while class members are actually constructing or fabricating a product. In the junior high school this objective is most often achieved through the completion of "take-home" projects. Students construct projects at school and take them home

for their own personal use. Projects must be useful, attractive and appealing to students. Whenever possible optional projects involving the same learning experiences should be available. Group projects and cooperative production projects should also be a part of the program and should be encouraged because students will learn production techniques used in industry.

In some courses, such as auto mechanics, it is not possible to utilize the "take-home" project approach. In such instances, class members work on laboratory engines and mock-ups, and then on automobiles which have been brought into the shop for service or repair. Production printing, when properly controlled by the teacher and authorized by the principal, can be a vital and valuable learning activity, and used to supplement work on student projects in graphic arts. Experiments are appropriate in electronic courses, but should be supplemented with project construction and activities involving the repair of electronic equipment and appliances. Students in carpentry classes should, whenever possible, construct storage buildings, or perform remodeling jobs in the community. In each instance, shop work should be as similar as possible to that performed in industry, and students should strive to meet industrial standards of craftsmanship. Learning, motivation, and interest increase greatly when students undertake projects that have meaning and relevance.

SAFETY

A planned safety program is essential in all industrial education courses. Teachers should take precautions to assure that all machines are properly guarded; that eye protection devices are available and used at all times; that hazardous materials are properly stored; and that the shop is maintained as an orderly and safe place in which to work. Although safety tests must be administered to all students, safety instruction should be performed on a continuing basis. The teacher must emphasize the importance of safety measures in all instruction, and insist on the safe use of materials, tools, and equipment by students throughout the year. In addition, teachers should set an example by utilizing safe procedures and safety devices. They should also be alert to safety hazards that may develop and report them immediately to the appropriate office.

STUDENT LEADERSHIP

Development of student leadership in industrial education classes can be facilitated through assigning student responsibilities for shop organization and management. Keeping a shop and its supplies and tools in order through proper care, cleaning, and storage is a learning activity that also motivates students to follow instructions and cooperate in achieving common goals. Student leadership can be further enhanced through participation in organized youth clubs, such as VICA (Vocational Industrial Clubs of America). VICA is recognized in the state and in the nation. Its objective is to develop industrial leaders for the future, with an emphasis on craftsmanship and school community service. Teachers of industrial education classes should not only instruct in subject matter skills, but also in the personal and social skills that are necessary to find employment, to keep a job, and to qualify for advancement.

FIELD TRIPS

Field trips that are related to specific courses should be planned to offer students opportunities to observe at first hand the performance of jobs in industry. The trips should be scheduled in cooperation with representatives of local industries that are directly related to the trade being taught. Through participation in field trips, students will recognize more fully that what they are learning in the school shop is relevant, that it has industrial applications, and that they are learning salable skills. Meaningful observations of employees at work also enable students to receive realistic guidance information that can help to motivate increased effort and accomplishment in the related subject. Despite the interruptions of work in other classes, properly planned field trips are a valuable experience that cannot be duplicated in the classroom through use of films and other visual resources. Availability of transportation and administrative approval should be thoroughly checked out before field trips are scheduled.

CONTESTS

Competitive events for students enrolled in industrial education subjects provide recognition for those class members who excel in their performance. Teachers should encourage their most talented students to enter their work in local, state, and national competitions. The achievement of a high level of craftsmanship through participation in such contests, raises the level of accomplishment in the program. Teachers should, therefore, take the extra time necessary to encourage their most capable students to compete. In this endeavor, however, the teacher should not neglect the instruction of other students. When properly scheduled, student preparation for entering competitions can be a part of the regular instructional program. The rewards to teacher and student are great, and the results help to improve relations with parents and the community.

OPEN HOUSE AND SCHOOL EXHIBITS

Open house events and school displays are excellent ways of informing the general public, parents, and other school staff members of the value and importance of industrial education courses to students. Teachers should welcome an opportunity to publicize their programs. The industrial education department should sponsor special events for parents and community advisory councils to make them aware of the excellent work performed by students. Local business and industry can also become involved through displays and sponsorship of contests. Displays of student work help to inform other students of the outstanding nature of the program, and encourage them to enroll in industrial education classes.

PLACEMENT OF STUDENTS IN JOBS

Teachers of vocational courses that are designed to prepare students for employment have a responsibility to assist students in locating job opportunities. For this purpose, the teachers should be acquainted with the needs of various companies in their immediate community and elsewhere that may employ graduates.

Placement of students who have satisfactorily completed a vocational program should be cooperatively arranged by the teacher concerned and members of the local school trade advisory committee.

Teachers should also provide letters of introduction and references; advise and counsel students on how to obtain employment; and complete placement reports to justify the expenditure of funds for their vocational program.

Among the many reasons why a teacher should assist students in obtaining their first jobs are the following:

a. The teacher is aware of the strengths and weaknesses of students and can communicate this information to the potential employer.

b. As a craftsman, the teacher is in a position to talk with the employer in the technical language of the trade.

c. The teacher is acquainted with employers in the community and is thus able to guide students to the appropriate company, and to discuss with the employer how the student may best fill the employer's needs.

Through following-up on job placements of students, the teacher gains information that is valuable in keeping given vocational courses up-to-date and in continuing to meet the needs of industry.

TRADE ADVISORY COMMITTEES

Recommendations from representatives of labor and management, through District trade advisory committees, should establish the basis for developing and implementing viable industrial education programs. In addition, the committees contribute advice in such areas as course content, types of equipment, and job opportunities. These groups also help to recruit teachers, arrange for loans or donations of equipment to the District, and assist in the placement of students.

Although the District-wide trade advisory committees in each of the six major subject fields meet annually to give direction to the central staff supervisor concerning District programs, these committees should be supplemented by local school trade advisory committees. Teachers should utilize the resources of industries located nearest to their school that are most likely to employ graduates. Representatives of the local school committees should serve on the School-Community Advisory Council to provide local industries with a voice on the council.

VI. BUDGETS AND FACILITIES

BUDGETS FOR INDUSTRIAL EDUCATION COURSES

Budget for industrial education courses should be allocated through the school's Instructional Materiel Account. Administrators should make every effort to be certain that these funds are sufficient to conduct an effective industrial education program. School allocations for purchase of equipment and supplies are based upon the total enrollment in the school. Yet, principals must necessarily allot industrial education departments

a greater share of IMA funds because the cost of equipment and supplies is greater than that of other departments. In addition, the nature of instruction in industrial education requires use of more consumable supplies than is necessary in academic courses. Allocations for specific shop courses should be based upon the number of pupil periods offered and the nature of each subject.

Since major equipment is costly to purchase, a long-range plan for replacement of equipment should be developed by the industrial education department. Based on the plan, the principal should commit a portion of the school's IMA account for this purpose.

VEA funds administered by the industrial education office may not be used to supplant local school funds. These funds are intended for new equipment, not provided by the District, that is necessary to keep abreast of technological changes in industry. Equipment provided through VEA funds should be identified with appropriate labels and be included in the shop inventory.

STUDENT BODY FINANCE

Administrators should cooperate with and encourage industrial education teachers to use student body funds to improve their instructional program. Funds provided to teachers through the District Instructional Materiels Account (IMA) are minimal and in some cases not adequate to provide a strong instructional program.

Some students want to construct furniture in woodshops or complex metal projects in metal shop. The IMA funds provided the schools are not sufficient to purchase the materials necessary to construct these projects. Student body funds will provide a necessary budget for the purchase of these materials and the student reimburses student body finance for these expenditures. Thus, through the use of student body funds, the instructional program is strengthened for the benefit of the students.

VEA AND ESEA FUNDS

Federal funds are provided to the Secondary Industrial Education Program through the Vocational Education Act (VEA) and the Elementary and Secondary Education Act (ESEA).

Generally, the VEA funds are expended in industrial education classes which are vocational; i.e., classes which are two hours in length and taught by a teacher with a vocational credential. The funds are used to purchase equipment and supplies to improve the program. These funds should not supplant District funds or reduce District effort. The vocational teachers, in order to receive these funds, must conduct a vocational program and complete student job placement forms.

The ESEA funds are generally expended in junior high industrial arts classes. The amount of funds which are received from ESEA are about three percent of the amount received from VEA. Tools, equipment, and audio-visual equipment and materials have been purchased for junior high industrial arts program with these funds.

FACILITIES

The shop or laboratory used to offer industrial education courses should have adequate space, lighting, ventilation, and other characteristics that protect the health and assure the safety of students and teachers. There should be adequate space around machinery and benches so that students may move about and safely operate the equipment without undue interference from the presence of other students. Because of the nature of the work and of the projects undertaken in junior high school, shop facilities are usually smaller, and equipment is generally of a smaller size. The overall space requirements for a junior high shop are not as great as those of a senior high shop.

Storage rooms, lockers, and a seating area for related instruction and showing of films should be provided in junior and senior high shops. When needed, outside storage and work compounds should also be provided.

SUPPLIES

Supplies for instruction should be provided in adequate quantities through funds allocated by the District. To achieve optimum results, each industrial education teacher should receive sufficient supplies for class members to achieve course objectives without cost to the individual student. Industrial education classes would then have the same kind of financial support as that provided for academic classes. In practice, industrial education teachers without adequate budgets have found it necessary to use other means of obtaining the necessary supplies.

Student body funds should be used to supplement District funds in providing for program enrichment, particularly in the construction of desirable take-home projects. Other supplementary supplies may be acquired by individual teachers from industrial sources, donations, and state surplus.

EQUIPMENT

Equipment in school shops should meet industrial standards and be representative of that being used in industry. This is particularly essential in the vocational program conducted for students in grades 11 and 12 in high schools and in regional occupational programs and centers that are preparing students for employment in industry.

All equipment should be properly guarded and meet District, city, state, and national safety orders and regulations. Enough equipment should be provided so that students need not unduly wait in line for an opportunity to operate a machine. When equipment becomes worn or obsolete, it should be replaced so that students will receive instruction in the use of relatively modern equipment.

MAINTENANCE OF EQUIPMENT

Services for the repair and adjustment of shop equipment should be provided through the appropriate district maintenance service area. Requests for service on school shop equipment should have a high priority since the instructional program cannot be continued without properly operating

equipment. School administrators and members of the maintenance staff need to be aware that a complete set of equipment that functions properly is just as necessary in an industrial education class as is a complete set of textbooks in an academic class. Maintenance of equipment in accordance with industrial standards and sharpening of hand tools and saw blades by the tool sharpener are essential so that the teacher may devote class time to instruction rather than to maintaining equipment. Minor maintenance and adjustments of equipment should be a responsibility of the teacher.

INVENTORIES

Maintaining accurate records is essential to the conduct of industrial education programs. Department chairpersons and teachers should maintain inventories of equipment, tools, and supplies. District, student body, and personal items should be appropriately identified in these records. Equipment should also be identified by type, model number, and date of purchase.

Inventories should be made at the end of each year and whenever there is a change of teaching personnel. In the event of a theft, fire, or vandalism, the inventories should provide the information necessary to recover or replace the items concerned Maintenance records of equipment should be kept as a part of the inventory.

The department chairperson should have file copies of all inventories. Copies of forms for recording inventories are available from the District industrial education office.

VII. SUPERVISION

DISTRICT STAFF

Staffing for supervision of the industrial education program should include provision of central office personnel for District-wide supervision and leadership. Within the industrial education program are the major fields of auto mechanics, drafting, electronics, graphic arts, industrial crafts, metals, and wood and construction. Because each field represents a unique and specialized subject, supervision by a resource teacher who is knowledgeable in the specific subject should also be provided.

The technical content of each industrial education subject is the same in all areas of the District. Therefore, assignment of centralized supervisory personnel is the most economical way to assist the one teacher of each subject assigned to each school.

ORGANIZATION OF DISTRICT INDUSTRIAL EDUCATION STAFF

Supervisor, District Supervisor Industrial Education -
Pete DeFranco - 625-6463

Specialist, Secondary Industrial Education -
Tom Catlett - 625-6463

Specialist, Elementary Industrial Arts -
Wib Namestka - 661-0845

District Resource Teachers - All areas

Crafts and Upholstery	-Tony Vacca	- 997-2491
Automechanics	-James Wathen	- 742-7551
Drafting	-Harvey Phillips	- 997-2491
Apprenticeship	-Hank Springer	- 742-7551
Electronics	-Kim Badrkhan	- 742-7551
Graphic Arts	-Joe Lopez	- 742-7551
Metal	-Gene Lew	- 997-2491
Wood and Construction Trades	-Dennis Pugh	- 742-7551

All staff are available on a District-wide basis to serve elementary, junior, senior, adult, and ROC industrial education programs.

The department chairperson provides general supervision of the school program and supplements the principal's supervision of instruction. Since the department chairperson normally possesses technical competence in only one subject specialty, he should utilize the District resource teacher in each subject field to assist in resolving questions which may arise relating to the technical competence of other teachers in the department.

RECRUITMENT OF TEACHERS

Recruitment of industrial education teachers should be a continual effort to assure an adequate supply of qualified instructional personnel.

A teacher of an industrial education subject should have training and experience in the field concerned. Candidates who have completed the typical state university teacher training program should have a minimum of 12 semester hours in their subject fields, such as woodworking, electronics, drafting, etc. These candidates should also have trade experience in the same fields. Although their trade experience may necessarily be part-time, full-time trade experience is more desirable. Junior high school teachers with trade experience will be able to conduct more realistic exploratory courses than those who have only learned their technical skills through college or university course work. Candidates

recruited from industry for high school vocational teaching assignments should have completed at least two years of college and possess a minimum of five years trade experience. They should also possess the personal qualities suitable for teaching adolescents. Personnel recruited from industry should be directed into a program of studies that will offer the teacher training and general education that they will need. The ideal teacher is a craftsman who also has had the appropriate university or college course work.

TEACHER EVALUATION

Although rating or evaluation of teachers assigned to the industrial education program is the responsibility of the principal, he or she should utilize the resources of other administrative staff members and of the department chairpersons prior to making judgments regarding the competency of the individual teacher. The industrial education supervisor and subject resource teachers are available to provide information concerning teacher performance. Ratings should be based on the success of students in achieving course objectives, as well as on the quality of shop maintenance, the condition of tools and equipment, and the adequacy of the general shop environment. District subject resource teachers can assist the teacher in strengthening teacher skills and also can identify technical weaknesses that may not be evident to the principal. Personal qualities and other general standards should be the same as those utilized in assessing the performance of teachers in other fields.

SUBSTITUTES

Day-to-day substitutes utilized for industrial education courses should possess the appropriate credentials in the subjects to be taught. The liability of the District is increased when a substitute is assigned who does not have the appropriate competencies and credential. Therefore, the department chairperson should determine in advance whether a prospective substitute has the appropriate qualifications. When it is necessary to accept a substitute who is not qualified, the power to the machinery should be turned off and class activities should be restricted to classroom instruction on related information. The department chairperson should be certain that the regularly assigned teacher has provided a lesson plan for use of the substitute.

TRANSFERS

When transfers of industrial education instructional personnel are being considered, it is important that the subject matter competency of the teacher concerned be considered. Principals should avoid accepting teacher transfers unless the prospective new staff member has the experience, appropriate credential, and competency in the subject to be taught. Industrial education is not a subject, but a generic term that includes a variety of subjects that require different types of specialized training.

LEAVES

Leaves for teachers of industrial education subjects should be granted for the purpose of professional growth and improvement of instruction. Therefore, requests that permit teachers to be employed in industry and to increase technical skills should be encouraged. Leaves for the purpose of continued study or completion of advanced degrees should be permitted when they relate to the improvement of the teacher and his or her contribution to the program. Teachers should not be granted leaves after June 1 of a given year because of the limited time in which to recruit qualified substitutes and the shortage of industrial education teachers. Qualified teachers will seldom accept substitute assignments.

INSERVICE TRAINING

Inservice training for industrial education teachers should include workshops sponsored by the central office industrial education supervisor and subject resource teachers; summer and evening college courses; summer or part-time work experience in industry; and District-wide institutes and leadership conferences. In general, the major types of inservice training are as follows:

a. Methods courses for craftsmen from industry who have a strong background in their trade, but who are not necessarily acquainted with techniques of organizing instruction, nor of preparing instructional resources such as lesson plans, tests, and audio-visual materials.

b. Technical skill courses for teachers who do not have an opportunity to be employed in their field of specialization. These courses assist teachers in learning about new equipment, materials, and techniques currently used in industry.

c. Released time for department chairpersons and teachers to visit other schools and industrial sites.

CREDENTIALS

Teachers of industrial education courses must hold a valid credential which authorizes them to teach the specific course to which they are assigned. Designated Subjects Credentials list the subject authorization on the credential. Standard Teaching Credentials indicate major and minor fields only. Reference to District examination requirements indicate that a minimum of 12 semester hours of college work in the specific subject, or five years of trade experience in the specific subject are necessary for the credential.

At advanced levels of senior high vocational courses, the in-depth competency of the teacher should be reflected by the holding of a vocational Designated Subjects Credential.